# Pocket Notebook
## PN 26-03-07 (1926)

This notebook dates from March 1926. The pocket notebook contains notes by Thomas A. Edison relating to experiments with reproducers, phonograph records, chemicals, iron, asbestos, rubber and Ford starter batteries. The notebook was found in Thomas A. Edison's desk at Glenmont.

EDIS 223920

50 (190 (38
150
400

38

19
100 - 31 11
38 30 -
54 248
19 93
73 11.78 -

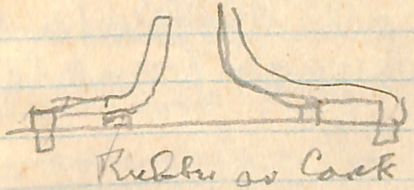
50 (300 (60

Mch - 1926

3346

March 7 / 26

Repdcr - Use large dia to get amplitude but narrow the area



this principle

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As Ammonia given off in pressing records perhaps something can be put in to Combine at 125 pressure of steam L Ott thinks free phenol combines to form a Amino phenol - Substance must not decomp at high temp -

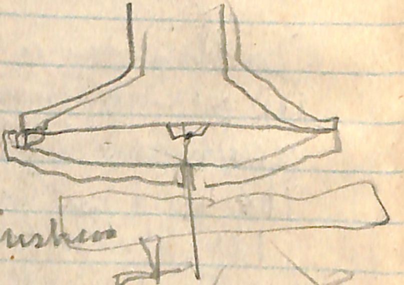
March 9/26

see if possible to put 2 springs into a single spring Motor
or a spring twice as wide

What is difference of Costs between a single spring & Double Spring Motor

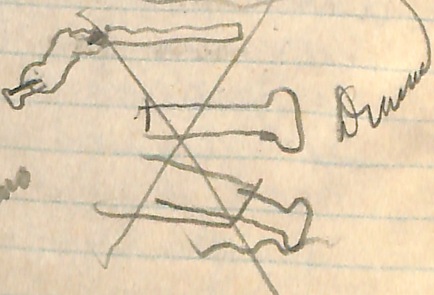
What is lowest cost of a Electric Motor to Wind

Try Repdcr



using air Cushion

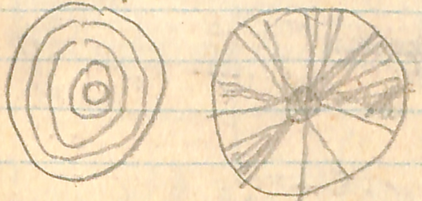
make thing brings out overtones of Compressed Tone, Piano



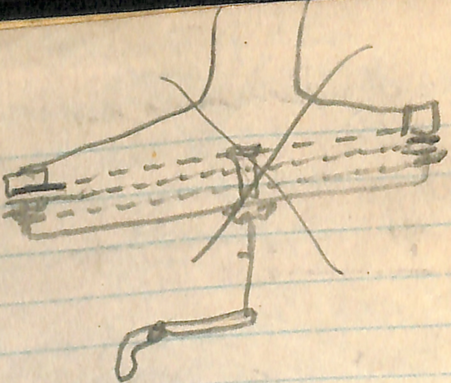
~~see if we can't have looser fits in Diamond lever bearing -~~

Keep Experimenting on Condensite Diaphragm
also use very thin one Corrugated to stiffen

(12) 3 Leafs Corrugated to be as stiff as 8 or 9 leafs.



Remember Cube of the thickness Law



2 or 3 grid diaphragms
+ final one no holes

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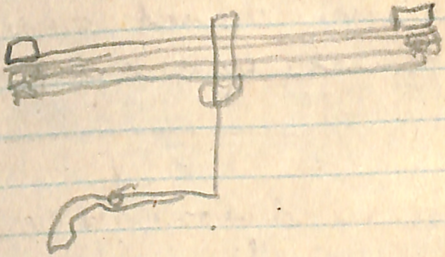
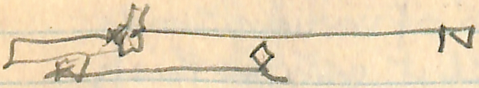
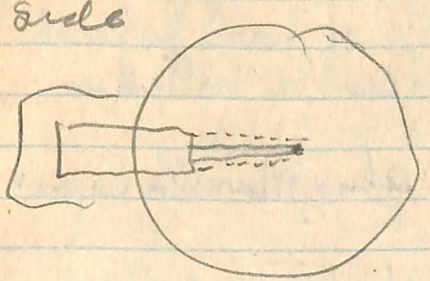


3 Diaphragms
.003 each
get rid square depth

With Recorder





Make twice as wide but,
same weight to get rid
of Cubic law in deflecting

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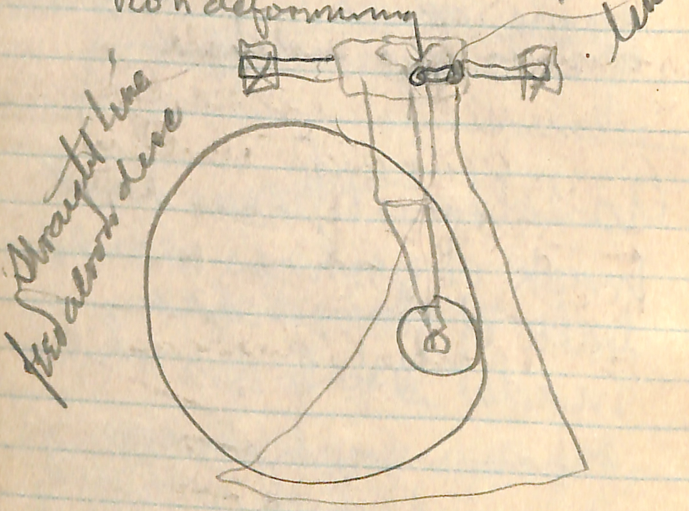
As Soldiers Chorus dont
track it perhaps would
track if lever was
made 2½ to 1 while
it loses by leverage
it would track & be just
as loud + get rid of blasts

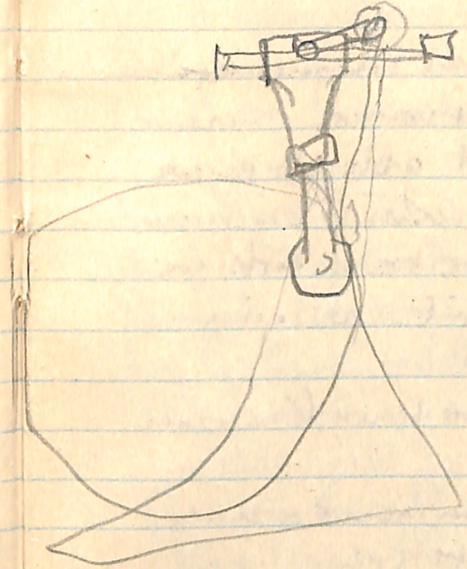
New Line of experiments

Use thick regular Varnish Condensate
mix colloids of various kinds
with it till it gets so thick
it can be sheeted on rolls
think 75% of hard colloid
particles can be rolled in

Also try glue, Manilla Copal

Also deforming colloids
like Silica, Bentonite for
non deforming





~~Promised Joe Mitchell~~
~~Chapple to come to~~
~~Coral Gables Miami within~~
~~2 weeks from 11th~~
~~Mch & call on him~~
~~at Venetia Apartments~~

Perhaps certain cheap Crystals can be pressed + Records made with or without heat, Organic or Inorganic / or Compounds like) Resonator if too brittle or non Coherent, some of its Solvent could be used to Moisten powdered Crystals or solutions of Tetrachloro-Naphthalene used + dried before pressing.

Suggestions to Payne

Put rubber Cork in filler hold + turn batteries upside down stop concentration at bottom, do this 24 hours then put back + test.

We know Fe shrinks + it may be that it shrinks uneven + gradually leaves high spots only for Contact then the parts not in contact gradually shrink Cracks. The years its used the worse it shrinks

If we doubled the pairs this trouble would be lessened with other Evils

Try 16% Soda as an Electrolyte.

Try Mix of 16% Na & 21% KOH, Equal weights

Try Mix of Cd + Fe

ditto Fe & small %
Cobalt!

Try Fe not reground
all same size ditto
all mixes,

Ferrous Ammonium
Sulphate,

Try coating iron
particles with Silver
by immersion but better
by Silvering process
with Formaldehyde

Iron triple crystallized
to get rid of Manganese

perhaps Fe wants
less or more pressure
in making slabs than Ni?

Thoroughly ~~Wash Asbestos
free of grit~~ -

~~Make Asbestos paper
with distilled water
hot, dont think asbestos
free of stuff as we get it~~
Too much iron in it
Comes out with HCl. quickly

Try without Mercury
Hg is some soluable in
Solution & may affect
Contacts

Mix Copper powder
with Fe - plate Ni on
Iron - Fe dont reduce
Ni & perhaps will
plate,

When we corrugated
packets Capacity was
less closed holes I guess

perhaps there is something
in KOH that is bad
for iron — could
treat sol before use
by warming to 135
in KOH, + not using
the iron but to deposit
the bad thing on iron

---

Iron could be lightly
pressed to even up
+ just hold it to
asbestos, if lightness
of pressure needed—
If this is tenable then
may not need so much
pressure on cells after
assembling

Reverse some cells +
then recharge reg see
effect on curve we once
treat iron back this way
+ made bad cells OK.

Use sheet iron in
place of Nickel
between iron mix
to have no Emf

A little sulphide
KOH might be good
in Original Electrolyte
it would make a little
FeS more which
if made anode go to
good iron.

Try igniting precip
Fe in hot Conc NaOH
to dehydrate

are the 5 cells well
insulated from each other
on Curve discharges

Payne on some dischgs
why stop the Curve when
you always do why not
let it run way down as
far as it will go to
learn what it does

Why not take a
Cell & run twice
normal dischg
to Zero on it when
it shows bad
do this 2 or 3
times on same cell
so we can learn
something at normal
and at 300,
Then various rates

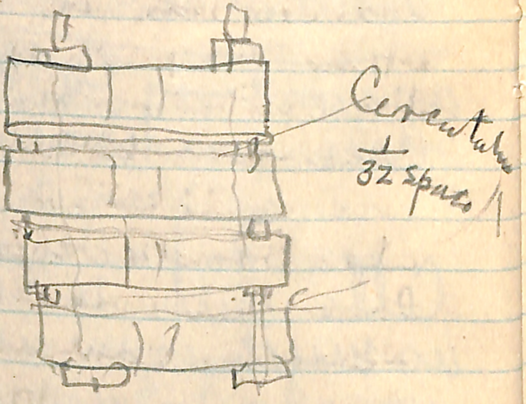
Say good charge then to
normal dischg &
20 amp 40 80 160
320 — sure to learn somethg
according to what
Cell you use

Cells with 4 times
as much iron as NiOH
ditto 4 times as much
NiOH as Iron

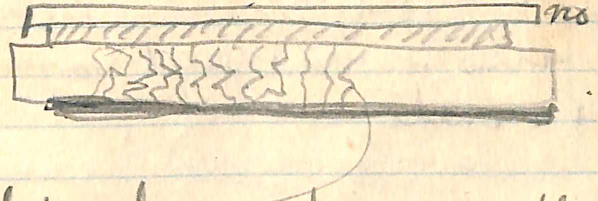
Insulate by mica the
Cell in say 6 sections

perforate the nickel
sheets & around bars

plate Ni sheets with
Silver, Copper, Chromium
Cobalt,



Ring Contacts mica then
Metal ring + smaller
Rod, as an Expmt



Channels very fine, possibly
show the pinch Effect,
The conducting thread of
Electrolyte breaks, also
gas would cause a break
also osmotic action
These thin threads of
Electrolyte Continuously
Changing so become
blind & break + new
Channels form

Spun glass, dresses are
made of it, Easy to make
+ if fine are very flex
they will probably last
for long time

If Nickel flake is mixed with iron & put in pockets in A 4 the iron is dead nearly same way in tubes There is a Voltage between Fe & Ni & this oxidizes the iron surface. flake also probably cuts off circulation through pocket.

Better see Hunter & see if Hydrogen cant be extracted from coated iron in pot by vacuum 20 st. without catalyzers

Also by cooling & wetting in 15% solution of $NaOH$ so it wont oxidize

Oxygen from $NiOH$ may go thru asbestos & oxidize the iron surface & hurt contacts. the H given off is only thing keeps it back

Perhaps asbestos paper should be loaded with as much Magnes as will hold & be strong enough this would prevent gases mixing

If in any way iron gets oxidized in cell inactive Magnetic iron may result

If the Asbestos wasnt
not constantly change
in shape & internal
channels we would get
more even results
The thicker the asbestos
the worse it is — ditto
NiOH & Fe

It looks like a cell
with 150 disch rate
was best point to
work to. this would
be rather high
to get over 300 but
it would be commercial

Put very fine Bismuth
in with the Iron — ditto
NiOH seperate Expts, think
can reduce by Zn method

see if fused Boracic acid
will spin in threads if so
can treat with a salt like
Ca Ba Sr etc to ~~replace~~
form a salt not sol in
KOH.
Try fusing Borates
already formed & drawing
out in fibres those that
melt high temp try acetylene
OxH & arc flames

Cryolite, put Hart on it

Use Asbestos or Mica
flow iron over press
then flow Non Conductor
powder over & again press
Then NiOH flowed & pressed
then sheet Nickel —
then NiOH. The non conducting
powder & so on — dispensing
with asbestos

form very thin plates of
hard non conducting powder
that will cohere / if not
use a binder. These slabs
can be used instead of
asbestos, The binder should
not be sol as affected by
KOH, hence slab will
not go to pieces by
swelling when put in
Electrolyte
Magnesia a good base
Binder gelatinous Silica
Ignited at white heat.
after formation by pressure

Binder, Asphalt -

Rubber in solvent perhaps
some S in it & Vulcanize
Alumina Trihydrate
if ignited,

Binder, Aluminate
ignited

~~Binder - Silicate soda or K~~
~~with MgO ignited,~~

~~Fritted, together by fusible~~
~~substance, Cryolite~~
~~Monosilicate Calcium -~~
~~Ba Sr~~

If plates crack it would
not hurt, Cracks would
be fine -

~~Clay for fritting & then~~
~~ignite,~~

~~Bentonite -~~

~~If fibre is wanted some~~
~~Blue Asbestos might~~
~~be used if fibre short~~

~~powdered glass 200~~
~~mesh also be used~~
~~lime glass or Pyrex formula~~

Steel separators used or 1 cell formed of several sections.

~~These plates can be made by flowing powder & pressing~~

~~Also of colloid binder is used damp they can be squirted in sheets like clay—~~

~~The plates could be made of coarse particles as binders would lock them together OK. such as clay~~

~~Binder Fluor Spar~~

Tetrachloronaphthalin dissolvin in Electrolyte
ng

~~Think very fine Portland Cement can be made in plates .005 thick & be porous & slightly flex~~

~~Think fine clay & MgO thru 200 mesh Could be mixed in Rolls (differential) & Rolled out in sheets & Cut to size providing minimum just damp clay was used & powerful rolls— then dried out baked slowly & then fired to yellow white possibly heavy presses used and weights & lot burned at once~~

(See Dana for binders)

Tetrachloronap could be pressed & fibre made with diamond tool for cloth pure floated clay could be forced through .001 dies into filament, & ignited to shrink very much in dia & length to make fibres, [illegible] & paper mache

There must be many Colloidal like minerals of low fusibility that may be used

In Making porous Cups, flour, starch Etc is mixed with Clay Etc & in burning the Carbon burns out Can use this also for porosity making & also produces flexibility

Binding or flexibility is to the Cube of the diameter —

If filaments can be made they would probably be of great utility.

white
^ Asbestos is NG at present as it dehydrates & powders upon a fire

In fact MgO very fine could be mixed with gelatin or soap or Viscose squirted through probably .0005 ~~dried~~ with some clay in it a dried & ignited

Perhaps if .0005 could be a Continuous process passing thro hot tube then through Oxy H flame

All Colloids will be easy for .0002

must be diamond plate or
steel very thin & backed up
by hardened steel - perhaps
saphire or garnet will do

---

Nate
See if Double Ni Fe Sulfate
if so make some ignited &
Reduced by Hydrogen to see
if OK. Ni will conduct

ditto Bi - ditto Cu
" Sb Cadmium

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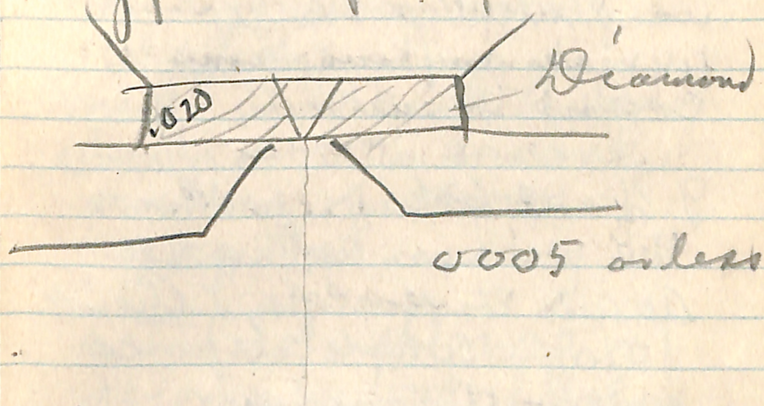
Payne Continued

MgO. or Bentonite Etc made
into a putty with some Clay
or binder with Linseed oil
dried & ignited -

possibly Silica filtering
brick could be backed
up & a colloid like clay
forced therein in filaments
by powerfull pressure



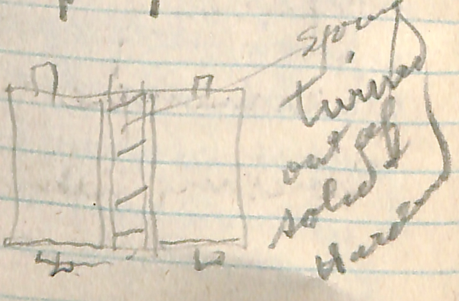
It is possible or reg
Asbestos paper could be
water proofed by soaking
in a Solvent containing
a high melting point Asphalt
Etc which also when
paper warm be pressed
& would not swell in
Electrolyte & deform

I think porous slips could be reinforced with Ni wire — 1/4" mesh

Colloid Mill could be used in these Expanders to make any kind of colloid to suit —

I dont believe we have the pressure when cells go into Electrolyte. I think 020 in Whole cell would relieve the pressure

Must have a Spring Washer on each pole or Something that will follow up



Cholesterin a wax not attacked by boiling Conc alkali — probably hard to get dissolved easily boiling alcohol. Might do to soak Asbestos sheets in — to prevent swelling sublimes at 200 Cent

see if tetrachlornap is decomp by hot alkalies

it is — TAE

Blue Asbestos, but with Very thin white asbestos separating

Cumarone in Solvent

Soaking asbestos

Treat Asbestos with
hot Caustic lime
Caustic Sol Barium
" " Strontia
to displace some of
the silica, or water.

---

use of Asbestos in hot
$H_2SO_4$ Conc will dehydrate
without losing strength
also NaOH,

Asbestos could be
dipped in Solvents
Containing things or
long soaked therein &
thrown off excess by
Centrifugal or pressure
& dried, whatever stuff used
it should be made
insoluble again in
KOH,

If Lampblack could be
ground up with dy
binder & ignited so
make it semicoked
& it would be light &
very porous —

Some might be mixed
with asbestos & put into
the paper - This would
Enormously increase
friction & prevent flowing

Binder could be a
Carbonizing Compound
like sugar Etc at
low temp so it wouldn't
conduct, Viscose also

Ni sheets might be
perforated + NiOH flowed
over and pressed - ditto Fe
no asbestos separators need
Then face of Fe + NiOH
painted over with
a Colloid emulsion in
Alcohol Benzol + allowed
Evaporate + Repressed
if .015 thick would be
OK - but a binder mixed
in KOH would make it
more practicable,

Could use 2 sheets
of Ni to each element
if necessary in Mfg

It's probable if 50%
of gritty stuff like MgO
Could be incorporated
with asbestos it would
stop flowing

It looks as if Channel
must be abandoned

Burnt MgO must be
porous itself -
get some Californ
Magnesite + burn it
to Caustic

Mix MgO with Rubber
+ S + sheet it + Vulcanize
see if porous + flex

If we use binder in
asbestos, we could set
binder by hot pressing
of sheet just below
dehydrating point -
Could use superheated
steam in press

See if Si can be dissolved
Out of Blue Asbestos by
Hydrofluoric — or better
iron dissolved out leaving
Silicious Skeleton —

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Hunter's Reduce Ti
& when cool pass
dead dry ammonia
gas.

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Kieselguhr ought to combine
with hot Caustic Lime —
could treat Sheets with Lime

Kieselguhr ~~made~~ ignited with
NaOH till insol in strong KOH.
then sheeted, with Coumarone
+ some Straw oil to get it
flexible —

Expmt on Cumaron resin
& Straw oil for flexible
binder after pressing

Try also Asphalts softened
with straw oil —

Also Very hard BS

Try distilled BS till
Somewhat Brittle, then
softened with Straw oil as a
binder for Asbestos — also
also see if can load the
BS with fibre & chalk & work
like Button stock make
Needle records

Get some Fibrous gypsum
see finest obtainable
Make paper & try —

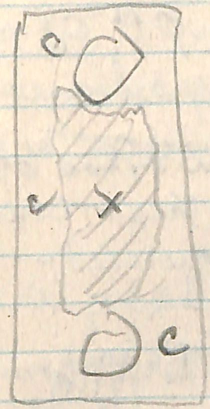
Actinolite — Look up
Dana & get fibrous
Mineral & make paper

possibly plaster paris
which is fibrous, will bend
in thin sheets
possibly if treated could
be harden so fibres not
break when pressed

Ignite & dehydrate Rag Asbestos
paper then treat with displacing
Solution — Ditto ignite to
white heat see if gets hard
again — also white heat
loose Asbestos heated white
heat see if harden if so
make paper

Right thickness of
Silicate soda squirted
thin hole .001 & immersed
after drying well in a
Sol of Chl Mg might
displace soda forming
Silicate Mgo not
hydrated — or lime water

might do it, or it might
harden in [illegible] acetate Mg



I now believe there is flow
to the Asbestos that X
spot shown in disassembled
cells sustains the pressure
and large part of the C
has light pressure
Either C or the X is the most
active
WE must stop flow
This might be corrected

by dishing or the opposite
of the Top plates + Bottom
ditto, or the mould plate
forming Fe + NiOH strips
This is of importance

Could have an Extra sheet
at top & bottom + thus concave
or Convex as required -

Brands
Pyrophosphate Mg
precip white amorphous
Cakes together like Aluminum
trihydroxide on Drying

Strontium meta phos
not sol water or
alkali = Amorph
Ditto Metaphos Zinc
not decomp by alkali

Hexachloronaphthalene not
decomp by boiling KOH

Possibly Certain kinds of
Peat will stand KOH hot
try it - in place of asbestos

Can probably draw out
threads from a crucible
Containing the molten
mass by a wheel
+ make it continuous

From Native Silicates
single or double, containing
Potash Soda or Lithia
are separated by grinding
with Lime + digesting
in water.

Volcanic
Lava only need + hot
[illegible] lime

It is probably that we can
Carbonize cotton paper
by immersion in high BP
Oils, Straw oil or Inorganic
things like Nitrate soda
without shrinking
& that Carbonized
is not attacked by soda

Solid waterglass (we have
several varieties) can be
drawn out in threads
when melted to liquid
Hartmann made a lot with
different amounts of soda
This thread can probably
be made Silicate of
Lime by soaking in
Chloride Lime or
Si Mg by soaking in
Mg + by [illegible]

I note that K glass
has no water, other Na
~~gk~~ have 30% water
but this may not be
fused stuff
See Watts under
Silica p 249 lot
of information

Says, phosphate alumina
triturated with water
glass gives tenacious
Mass which hardens
to stony mass -

(Waterglass might under certain
Conditions be used for Disc
record

As an expert think we should
make 1/4 or 1/8 size cell
or little old cell — using Mica
separators .003 or .005 & perforated
same as disk uses in Mimeograph
so 3/4 is perforations — & cell —
not that we can use Mica
but to prove that asbestos
is bad —

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Think we could make
Hard Rubber sheet .002" .003
& perforate like Mimeograph

Sheets of various material
like Silicate soda Could be
sprayed to even sheets &
Mimeograph perforated

Buy some Viscose
films thinnest they
Make & Try them

is not Rott — if OK & dont
Shrink or wrinkle
much & not attacked
if OK mimeograph
surface fine & close
together as possible.

Many sorts of films
Can be worked this
way when thin

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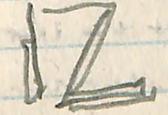
Instead of albumen
Varnish to make films
Try  by flowing

Celluloid films flowed
then Reduced by
Sulphydrate K or Na
& if not porous enough
mimeograph them

Be sure & make some Bismuth Cells Bi in NaOH, 6% also another set Bi Metallic in Fe 6%

---

Perhaps Fe should not be pressed or rather formed with heavy pressure only the Nickel - Fe pressed just enough to handle.

Carelessness may let water go below plates at times when fully charged & Iron self heats & brings whole Cell up to high temp unnoticed & top of cell goes out of biz say 1/4 [illegible] & creates higher dischg rate on all the rest of cell

Perhaps forming Run should be made with very light pressure 100 to 200 lbs sqr inch - then tightened up - This is way tubes are worked. The forming swell gives the pressure as there is give in the lap seam & thus gives more porosity Important Expt

Possibly we use too strong Solution 16% KOH might be better will have very much less Viscosity and no danger of high concentration in spots, & crystalizn in spots

Think we should make Cells 2 at 16% 2 at 12%. 2 at 9% - Might learn something

plain flow no channel

perhaps the $NiOH_2$ by mixing
can be made into plates
not on asbestos. if not dry
& its too friable, can add
a sol binder, like gelatin

also Iron same way.
using calendered asbestos
& assemble them seperately

---

see how soluable Carb of
K is in 21% KOH + Li ~~LiOH~~

also solubility of ~~[illegible]~~
$Li_2CO_3$ in 21% KOH Li
possibly $Li_2CO_3$ accumulates
in asbestos NiOH + Fe in
spots on charge do it
more & more as cell gets
older & resistance gets greater
from this action -

Could regenerate by pouring
out sol & adding 5%
KOH & soak out.

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2 to 4 cells should be
run in large cans
having several times
the amount of Electrol
Remember Bismuth !!

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Here is something -
when cell is chgd & a NiOH
is say 012 thick the first
part say 003 in contact
with nickel strip is
discharged 1st or partially
so that increases Res
to next 003 & so on
Thruout so in A4 tubes
Apparently NiOH should
be thinner & more
strips used - or
something to stop this
on slow discharge this
phenomenon is greatly
Reduced or absent

to prevent bad contacts
Sand blast the Nickel
slips. This certainly will
make some change:

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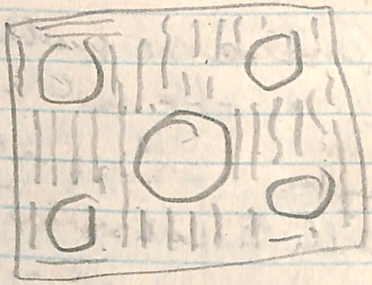
ditto Cut in strips but as
a whole integral



Removes no metal.

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Use 1/32 when hard
of Asbestos Coarse
fibre to absorb a
sufficient amount
of Solution & reduce
Crystallization if any

Our method of filling
with Water every day or
so at the top is bad.
as in time the whole of
the Solution inside mix
will be at crystalizing point
at the bottom of cell
should be filled thru
big hole at bottom
where sol is always
most Concentrated —

---

NEW PLAN

Nickel sheet, slowly Oxidize
it clear through
then reduce in Hydrogen
& make Electrode by
alternately dipping
in Conc Ni chloride
decomp by NaOH.

until has max capacity
be sure it is flexible

Iron Nickel sheet
Can probably be made
majority iron & done
same way or
Nickel sheet plated thin
Iron then Ni & so on
also all oxydized
& Reduced in Hydrogen

Or Ni Oxidized &
Reduced in Hydrogen
dipped in some iron
Salt & decomps by
NaOH ~~or [illegible]~~ &
again reduced in
H

N PLAN — Ni Ox & reduced
as described

but iron plate made by
pressing $Fe_2O_3$ powerfully
binder being ferric hydrox
Colloid & cathode
reduced in H.

Extra Ni sheets may be
used for conduction
if necessary no
pressure disk required
by this plan —
& asbestos & other things
Can be used as Insulators
so brittle plates can be
used.

Porous porcelain used
first metalized all thin
& reduced in Hyd.

perhaps Ni reduced in
H or reduced by Zinc
+ then pressed with a
NaOH binder & processed
+ reduced H again at
first a reg heat +
afterwards a very
much higher heat to
put together -

Think Clay & charcoal
mix + porous slabs
best bet, possibly
Condensite varnish
soaked in porcelain
pores once or two dipping
baked Condensed & then
Reduced in H,

Iron ditto in porcelain
or Blue Asbestos
slabs -

Carbonize some Condensite
films see shrinkage
+ action.
Sulphanilic acid.
Uric acid + other salts
that Carbonize without
melting -
Should Experiment with pipes
porous tile, also a common
sill-brick Reduced in H.

Mixes of fire clay &
very pure $Fe_2O_3$
Hydrate or anhydrous
various proportions

a Mix of ferric hydrox
+ a non shrinking
powder like quartz could
be pressed + heated
to weld + then Reduced in H

fine Powdered anhyd. Silica mixed with milk lime + dried or acetate lime + then made into a plate by pressure + burnt at yellow white the lime makes fusible Monosilicate at surfaces + lock together, if Charcoal was added of same size as sand it would be made porous

Perhaps a little Soda would frit Silica sand together

a h

A high M.Point glass very fine might act as binder a fluoride like fluorspar Cryolite

in case of Clay finely ground firebrick + Clay used with Charcoal

Regeneration is possible with NEW PLAN

Think 40% to 50% porosity could be got

Kieselguhr might be bound up with Ni sol + reduced H to give it good conduction [all wet + ~~Nickel~~ dried + Reduced in H.) + high temp to frit Ni together.

Think Chloride is most sol salt, may be Nitrate is better. Acetate see

Trihydroxalumin may be good binder for quartz sand

Portland Cement itself ~~or~~ sand + Cement or porous firebrick may do.

Ground Feldspar as a binder
all same size if necessary
test for porosity
Think Ni OH plastic could
be forced into pores by
pressure of wet + colloidal
like, ditto Rouge or
$Fe_2O_3$ - after metalizing
the porosity —

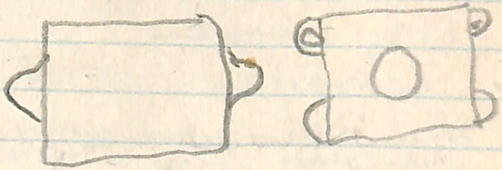
Measure porosity of
our Copper oxide plates
Sulfate Cu locks this
Sulf Ni should lock oxide
Ni - all Red by H.

Find highest temp Asbestos
will go without dehydrating
then perhaps can find a
colloid or hydroxide that
will bind at [illegible]

Mg Calcined California
binder, Mg hydroxide
Yellow heat, pressed by
hydraulic 005 @ 012

$Ni(OH)_2$ ~~Co~~ $(OH)_2$ dissolved in
Ammonia + Ammon salts,
gives most dense film &
tough, think it reduces OK
for soaking in pores of
plates,

with reduced Nickel just
high enough to heat & form
oxide we could mould
Contact solid sheet in



Think if fritted stuff
was screened to get fine
out could mix with 40%
NiOH + mould then [illegible]
[illegible]

perhaps the powdered Ni
reduced by Charcoal
we receive from Ni Trust
can be screened to size &
used, press some & see
how it work it is probably
porous —

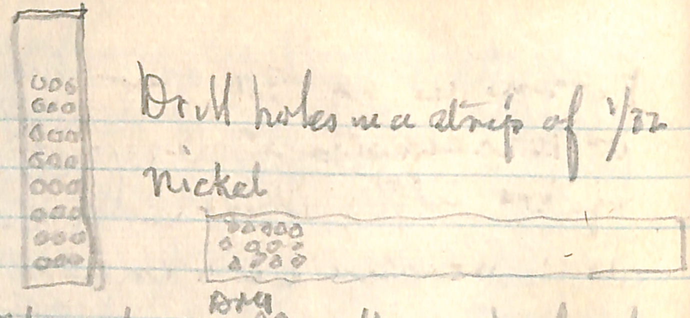
This Ni is dissolved in
HCl — precipitated by lime
washed & reduced by
Charcoal. = We could buy
the hydroxide & Oxidize it
by Soda fusion to get
oxide & then reduce
or we could use Sulphate
& use same process as
we iron —

The edges of the powdered Ni
plate could have a 1/16 rim
pressed very much harder

Buy short Cotton or perhaps
what is better short rabbits
hair mixed with Ox of Nickel
fine & moulded in sheets
& then burn out hair &
reduce by hydrogen
If sugar was used it would
break contact, ∴ $Ni(OH)_2$ which
might do

Dip porous paper in Conc
salts of Ni, Acetate etc
then carbonize & burn
charcoal.

Ni Ox pressed plates
Possibly some binder like
Ni Ammonia or $Ni(OH)_2$
then reduced in H,
pressed again & then
Alternating Current
deposit of [illegible] Ni OH. see more [illegible]



Drill holes in a strip of 1/32 nickel

Then force $NiOH$ in holes by pressure & shave off surplus see if comes out when put in $KOH$-21 if not charge etc to see if stay in or swells too much hole 1/32

Very fine $NiS$, moulded then oxydized slowly see shrinkage if small Reduce in H & press straight ditto $FeS$-

Mono Silicate of Lime Ba or Sr Mg will fuse low & be very porous-using. Silicate soda or precipitated $SiO$- mixed [illegible] with Mg-Ca Ba or Sr & heated to sinter

I can't remember if I noted dehydrating Asbestos & then bring to high temperature to render it tough again

Possibly Mono Silicate of Mg would fuse easy & be drawn into threads possibly some soda should be with it to fuse easier-

I am wondering is Sulfide Lime-set to fibres could have replacement by heat or otherwise by treating with Silicate Soda, washing & fusing or without washing

Might squirt glacial phos acid into caustic lime until it combines entirely. & other phos used in KOH 2d

Silicate soda squirted in filaments into Lime Ba Sr Mg salts, or Hydroxides

perhaps a dough could be rolled out .001 thick or less & then chopped off like we chop pure [illegible] & make a fibre .0005 or less for insulation instead of asbestos.

Possibly Hydroxide Ni from ignited Sulfate Ni, could be sized in granules then soaked in bulk by Hot Conc Chl Ni & precipitated by NaOH to fill pore dried & again NiCl after washing out 1st. treatment & so on then final wash, then dried and flowed in plate & pressed,

Sheet of $Ni(OH)_2$ pressed
then Ni Reduced from
Oxide ~~[illegible]~~ pressed in
sheets with porosity
and these sheets put
on both side of the
NiOH sheets.

---

$Ni(OH)_2$ granules
Surfaced by Silver by
$AgNO_3$ then plated
with Nickel & Crushed
formed into a plate
& washed free of
$NaNO_3$ dried & used

Try many Salts of nickel
amorphous non crystalizing
& Crystalizing ignite slow
also fast

Make many organic acid
Salts of Nickel & Crystalize
& ignite to get porous
Chunks that can be got
in granules by Cutting
or breaking

Also above pressed in sheets
then slowly ignited to
hold shape

Mix various proportions fine
clay & Our $Fe_2O_3$ + ~~[illegible]~~
~~[illegible]~~ put in plates bake &
Reduce with, ditto
ignited $NiSO_4$ -

Wrote Lott treat our
KOH 21% with Disc
Copper turnings to
Remove Sulphur see
he does it

WE must find a process to remove Manganese from our Iron & Electrolyte

---

Put 1 or 2% Cobalt in our Nickel — also try 1 to 2% in our iron — Catalyses — does no harm on other side even if a little Soluble might try 5%

Mix Bismuth Reduced by Zinc, with Fe also Seperately with $Ni(OH)_2$ — & not iron then both —

See Charles about John Millers Wages

Mn — treat our Fe with KOH, see if Manganese Comes out

Most delicate test for Manganese, Use Red Lead & Nitric acid, gives permanganic acid Color perceived after Lead has settled down

Chloride of Ammonia dissolves Manganic salt

percolate hot our $Fe_2O_3$ with acids & different things to make double salts to get out the Manganese

Also sulphate solution before ignition —

Perhaps we can flow dry
its granules in .010 sheet
or less + handle it + assemble
it without pressing it in
asbestos. especially if we
had something to lock it
as a binder like Gelatin

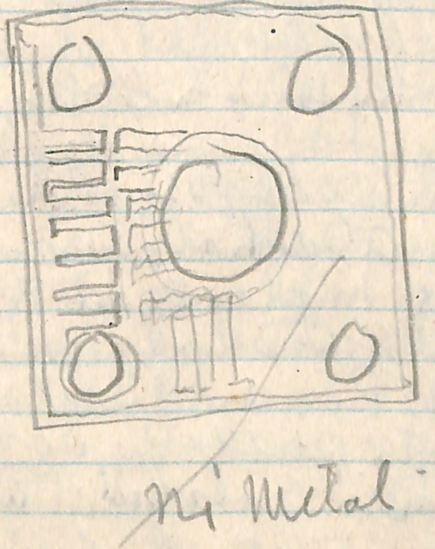
Could also do $NiOH_2$
same way.

Hiparafine from Oxidation
of Hippuric acid Watts
p 155 Very delicate
soft slender needs
Neutral not sol Cold
water, acids or Alkalis

Ferric hydrate is dehydrated
by heat to 160@200 in
a Saturated Solution
of Chloride of Calcium,
or Chloride of Sodium

The finest Bentonite
could I think formed with
a little Gelatin be squirted
into filaments .0006
+ reduced to a high lamp
to felt.

Johnson Diamond Dept
what pay is he getting



find Melting point & softening
point of Tetrachloro Naphthalene
also if decomposed by
KOH, hot > also if Crystalyze
& get pure, & then Crystalyze
to get very fine crystals
like asbestos if it can
be made into paper

Also If Dinitrobenzol
is sol KOH hot, also
get in fine needles,

Both the above is dissolved
by alcohol so can
be melted in Rosin
allowed to Crystalize
& Rosin dissolved
out possibly some
other Solvent can be
used if alcohol cant

possibly Osmos when
300 dischge rate is
used dries Electrolyte too
much at one pole but
if rate reduced to 150 &
cell made larger it
wouldnt

Payne. When cells
come off Razzle
you test the whole
battery. Why not
in dischg Read Voltage
on each cell of the
5 to see if 1 or more
cells is bad, one
cell low would
Queer the results

Seperate out in Gasolene very
fine Portland Cement - distill
off then use weighed portion
with boiling water till
almost if not goes Jelly
& pour in Mould like
asbestos sheet scrape
off excess & let it dry
to be used as a binder
Also may be OK for
other purposes

Find out from
Johns Manville Co if
they ever did anything
with Copper Shingles

Think we should perforate
some Ni sheets & try
Couple Cells

Get some Rag paper
& soak hot 21K & LiOH
on hot plate see if
time attacks it

Try Naphthalene in
Melted Rosin & let
it Crystalize see
if fibrous

Re-distill our distilled
water with small still
for watering bats &
making solution

Make 2 Cells with Ni
strips annealed in
Hydrogen —

---

perhaps displacement
of water in Asbestos
by lime, Ba Sr etc
is best done in an
autoclave at 50 lbs
etc —

---

Myroxocarpin
from White Peru
Balsam — Crystalizes
prisms inch long —
hard brittle. Melts at 115 c
to a transparent glass
& does not recrystalize
Its not attacked by
Boiling potash Ley
Could draw fibres
Watts 1075

Salicylate Magnesia
(acid) boiling aqueous
acid with Magnesia or
Carbonate, readily
needles — probably
Can displace the
Salicylic acid by
Lime

Asbestos could be
roughened by treating
with Hydrofluoric
acid - not deform
so much

perhaps Gypsum has
$SO_4$ displaced by oxalic
acid — also BaOH.

Mix different portions of
Lampblack & clay & burn in
sheets –

ditto in addition add
larger pieces of charcoal

ditto Linseed oil & let
it harden then burn

I think of Magnesia
Caustic then powdered
& sized to one size
.002 or .003 that it
can be put in vacuo
& Bergot dope rubber
poured on this will
soak in & dry leaving
a very thin film on
each particle in fact
produce walls for all
the space & when
thoroly dry will be

flexible & unattacked by
KOH possibly – $CS_2$ could
be used & a little Sulphur
dissolved in & when dry
plates can be vulcanized

This would be an ideal
substitute for asbestos

Possibly Quartz is better
as it wouldn't crush
if we had to press it.

Perhaps Cumaron Resin
& Slow oil will
be deposited in spaces
& Remain flexible
like blank we made

Asphalt & S.

Try boil Asbestos in
fairly Conc HCl &
test for what is
extracted Especially
Fe

Iron goes bad is one big
Cause of Ford starter batt
troubles.

Try if porous maleable
iron will be active

Try powdered white Cast
iron heated in closed chamber
No 5. Saulsbury

Reduce our $Fe_2O_3$ in fine
charcoal - No Hydrogen

Try reduction of $Fe_2O_3$
mixed with Reg powdered
Zinc - Leach out Zinc Oxide

after reducing our Fe
& while cooled down to full
red, Stop Hydrogen & hold
there for 5 minutes - to drive
off absorbed hydrogen & then
cool

Also try Vacuum but in
air tight receptacles so no
oxidation - Expmt to see
how long it takes to expel
H after shutting it off at
Red heat

Make iron amalgam by
Electroprocess & press
Excess Hg out by hydraulic
press, see if pyrophoric

Make $Fe_2O_3$ from burning
Sulphate but each lot
More & more Cobalt Sulphate

Dup this with Nickel Sulfate
instead of Cobalt

Reduce Ferric hydroxide by H
+ by charcoal or Lampblack
pressed lumps —

$Fe_2O_3$ - with various amounts of $Ni(OH)_2$ etc to form outside surface to iron for contacts

Mix of $Fe_2O_3$ well coated with films of ammonia dissolved nickel hydroxide —

$Fe_2O_3$ + sugar. Reduction on ignition of sugar to Charcoal

In our reducing cool the Ext hydrogen down to say 300 fahr + pump the water + gas out + shut off H + cool down ?

Reduce some Penn St Giles Fe hydrox not giving Blue with Ferrocy K

Try with Iron reduced by H + H displaced by $CO_2$ or Benzol, treat with HgCl this will remove the inoperative surface after washing —

Ignite the Fe Oxalate try this —

Mix of clay + Fe hydrox or sulfate to give different physical condition

Make some of the iron I made from sulphide of iron by Electrical Oxidation * [redacted]

Sulfide of iron this would probably be different than from igniting sulphate

* This comes physically quite different bulky

Mixes of Fe Ni + some Co
sulfates, ignited — + reduced H.

After reduction + when
Cold shut off H + let in
10% KOH or more
This displaces H in pores
+ prevent heating in
air, but it dont replace
the combined hydrogen
which only driven off
by heating to red

I think Hunter keeps
H on till cold + then
lets in Water or $CO_2$
N etc. This does not
removed the combined Hydrogen
to do this it would be
Necessary to cool to
a Red + pass N or CO
+ cool down to prevent
pyrophoric action The
iron then would be annealed
+ different physically

A bad thing is way we put
Mercury in which acts on
Fe. possibly black finely
divided Hg is apt to work

Another gas could probably
be used for removing H
from Iron Cyanogen

Clay etc mixed with $Fe_2O_3$
like the nickel scheme
These could be made
into 005 @ 010 baked +
reduced in H. selfheated
etc + used if the cracked
it wouldnt matter
This line is promising
as physical condition
in cell would not
change — + even if broken
up in granules would not
Change as much as now

Try some experiments with magnetic seperation of accurately sized reduced iron we used now & see if some merit. by sorting in 2 or 3 piles all of same size but less & less magnetic & seperating entirely non magnetic iron might get fine results —

---

Try Nitrate & also Oxalate Fe — see which has lowest temp of decomposition

---

Perhaps Nitride would be good. Fe by H then ammonia gas at a certain heat, if not pyrophoric it would be a compound & swell

Ford starter notes further along

Ask Dart which was best dope for stamping metallic filaments

Try Cholesterin —
instead stearine for
Dope on records

Dance Records

If cork is necessary try pressed
Cork

---

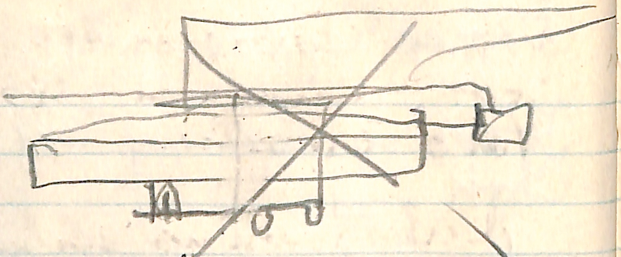
Use 3 diaphm Condensite
paper separated .001 -
& lock together in center with
½ solid I

---

Must use powdered cork &
a fixed point you cannot
tighten beyond a fixed
amount.

---

Try Recorder with
spring ½ thickness &
twice as wide, with
▽ piece between springs &
then V piece to diaphm



Try diaphm arranger
as to have them in Recorder
not clamped but cemented
assemble it on a ring
to be screwed in to a —
glass — use Cork instead
of Rubber —

Metallic Fe heated to dull red
in porcelain tube increase
in weight 12% sometimes
none its altered in its
physical properties
Its also produced when
$NH_4$ is passed over oxide
of Iron ~~at~~ hot red

Look up Dinitrosulphide of
Iron — Crookes Watts
Vol 3 391.2 —

ditto Look up anhydrous
Ferrous Oxide made by
passing $CO_2$ + CO over
in equal volume over
Red hot $Fe_2O_3$ its
black . pyrophoric
This stuff is what we
have in our cell ~~xxx~~
on dischge I feel sure
if so it ~~co~~ would be good
to run this down & see if
we could make & use it

Here is something Ferrous
Salts which have Volatile
acid give it up on ignition
leaving residue of $Fe_2O_3$
if acid such as $NO_3$ + $SO_4$
giving up its Ox readily

= Of ferrous ferric - if acid
such as $CO_3$ retains its
oxygen more forcibly
And metallic Fe with
more or less ferrous
ox if the acid is
organic
These reactions out
of contact with air
This is more like we
have in cell mix
which I think is
Metal on chg + FeO on
discharge =
It looks as if we never
should discharge iron low
always have enough
to maintain a conducting
system - must have excess
Fe over $Ni(OH)_2$

Find out the ratio of iron
to $Ni(OH)_2$ in A4 -

When ferrous Sulphate &
NaCl equal parts are
heated to redness
& washed Oxide remains
as red brown scales

---

Ferric ox is obtained
amorphous by igniting
ferrous Sulphate with
$\frac{1}{12}$th part of Saltpeter
& Equivalent produced
ditto igniting Nitrate Fe
& heating to red

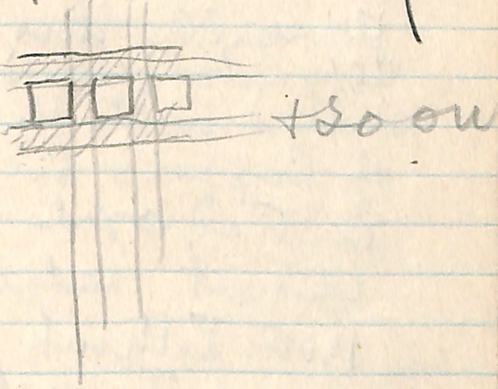
Its possible we use too
high temp in making our
$Fe_2O_3$ longer time & lower
temp makes it finer &
more sensitive

If

probably paper of
Sulfite pulp could be
Entirely replaced with
phos Amm or Mg etc
or Borate Mg or other
Salt used in KOH +
possibly be flexible

A screen of 100 mesh
Ni could be made, by
forming a female in
Wax 002 deep + 002
wide + plated after
grafiting with Copper
+ from the female
Nickel could be deposi
making a perfect screen
~~[illegible]~~ asbestos
002 sheets laid each
side + used as
seperator fords

In fact this method of making
Very fine screens for
other purposes would be
Cheapest known way +
Extremely accurate —
Substitute for Bolting
Cloth.



In ford perhaps the holes
could be 002 + Nickel
Oxydized 0001 so it
would be a non
Conductor + act as a
seperator without
asbestos —

or it could be glazed
with a non conductor
if unlike wires or flat

It would pay to expmt to
get an insulating coat
Try oxidzg Nickel Sheet
& see if it conducts or forms
an Electrode in KOH Li

Possibly this screen
separator could be
plated with thin skin
of Copper & Cu oxidized
to Red oxide which
is not reduced in
KOH I think any
way its not oxidized

~~perhaps Ni could~~
~~be~~

perhaps Ni Can be
Coated with Rubber
Peachey process
the holes blown
to prevent falling Solid

perhaps Ferric hydrox
film can be baked or
to $Fe_2O_3$ especially
After Ni is oxidized
some

Ford starter Notes
Iron mix continued

Sheet steel, cut to shape and thoroughly oxidized probably steam to see if it keeps shape then Reduced in H —

---

Heated red heat iron wire in vapor of sulphur burns brightly & forms Ferrous Sulphide

$H_2O$ vapor passed over red hot Ferrous sulfide makes black mass but some of sulphur remains after 3 hours

Ferrous sulfide heated low Red with once or twice

its weight of Carb soda
or K fuses to crystaline
highly magnetic mass
Water extracts Sulfide Na or K

2 parts Tin 1 Fe
malleable -

Determine Metallic iron
in our mix by Cupric
Chloride - hard particles
left are inert. see Exact
method Watts Vol 3rd p
371 Iron

Zinc in perfectly neutral
sol of Ferrous Sulphate
out of contact with air
throws down metallic
iron with some oxide

We should investigate Anhydrous
Magnetic Oxide there is
something here sure

believe this oxide or hydrate
could be used direct in battery
not have to be reduced in
hydrogen I got an analogous
oxide from oxly FeS in pockets
& then reversed it & reduced
it Read up this in Watts 3rd
(Iron) Bottger precips
ferrous Sulphate free of
ferric by addition of
Carb Soda wash precip
several times by decantation
then boils it with conc
potash this gives velvet
black powder not so
prone to oxidation as
that precip by ammonia
(why cant it be dried in
Vac bone dry)
If ignited in closed crucible
gives the Anhydrous -
several processes described

There is a big difference between
Ferric hydrox precip'd from
of Ferric salts & ferric hy
precipitated from Ferrous
hydrox & then allowed to oxidize
to ferric in the air
Ferric from ferric salts
dry up to Brittle Lumps
having shining fracture
~~ex~~ When heated to red give
hard black vitreous ferric

Ferric from Ferrous hydrox
by air oxidation are pulverent
when dry dry up without
much change of volume
to friable lumps which
have no shining fracture
& do not glow when
heated & leave a Brown
red lusterless Oxide
See further Watts Sups
1st Volume

Schumacher

Mon Oxide Fe can be
obtained in the Anhydrous
state by heating iron
in Carbonic Dioxide to
Redness is black
Crystalline & Magnetic FeO.
~~the~~ Tissandier Compt R
Watts 2nd Supplement p 687

~~64H~~
~~Reduction of $Fe_2O_3$~~
~~at 350 magnetic oxide~~
~~is obtained at 440 Ferrous~~
~~ox. [illegible] after~~

See $Fe_2O_3$ Reductions at
dif temps - Moisson -
3rd sup - 1097

Classen. p 1104 3rd sup calls
Separates Manganese from
Iron from heating a Conc
Solution with Sol of
Oxalate Potash & Excess

Schmecker

of strong acids and Whereby
Oxalate of Mn are precipitated
leaving Iron in Solution

precipitated Ferric Oxides *
is reduced by H at 86°C
That from ignited Nitrate
at 176°C

CO starts reduction
Earlier than H

$Fe_2O_3$ from igniting $FeSO_4$
is reduced by CO at
202°C by H at 260°C
by Charcoal at 450°C

* I think he means the
pulverent Ferric Hydrox
made by precipitd ferrous
oxidized in air

* The precipitn is by
Ammonia not super of
this —

Best way to form
the Magnetic hydrate
is to decompose a
mixture of Ferrous &
Ferric Salts by Ammonia
Must be poured into
the Ammonia & not
the other way — black

There are other Magnetic
Oxides made by heating iron
in air 1 Ferric 6 ferrous
4 Ferrous 1 Ferric
all Magnetic

May be something in
Magnetic Ox. good for us

Ah!

Ferric Salt precip by
NaOH gives: Ferric hydrox
If boiled for some time
in water it becomes
Anhydrous

Possibly this form will
reduce direct by the
Current under after
dry + under great
pressure formed in
Slabs + put in pocket

Our proper $Fe_2O_3$ [illegible]
heated to so high a temp
if difficult of dissolving
in acids
But if fused in K Hydrogen
sulfate is easily sol

Last 2 pages from
2nd Vol Mendelyeff see it + study

If ordinary ferric hydrox
dissolved in acetic acid
sol colored red If this
Cold solution is heated
to the boiling point
its Color rapidly
intensifies smell of
acetic apparent the
solution now contains
a New Kind of ~~fer~~ ferric
Oxide Mendelyeff

If boiling for some time
the new Oxide is precip

It may be iron basic
salts would be good
as they are all ferric
but many combination
with each other + would
give metalic iron on
reduction by H in dif physical
condition

Think pressed plates of powder
material if soaked in Fe Sulfate
& ignited will lock together
like our Cu Ox plates.
for use as separators

Also our $Fe_2O_3$ wet with
Ferrous sulfate - pressed
& ignited in plates can be
Reduced in H, for Ford
Iron

Consider use of Cyanide
of Mercury -
Mercury Diphenyl -

Get some fibrous
Anhydrite $CaSO_4$

Aurin - Obtained by heating
Phenol with Oxalic acid
& strong sulphuric
a Coloring matter
see 2nd Supp Watts
p 117. by [illegible]
[illegible]

from HCl sol Aurin
Crystalizes [illegible] in fine
hair like crystals Red
Dont melt at 220°C

See whole Article relating
to Aurin the mix might
make [illegible]
like Rosolic acid

Aurin should be
cheap

Azophenylene MP 170°C
Sublimes in heated Crucible
in crystals more than
one inch long needles
very slender
Watts 2nd Sup p 121

See Monochlorobenzol
4 derivatives needles
not attacked KOH -
Nitrobenzene etc
2nd Sup 144

Dichloroazobenzene
MP 155°C very long
silky needles insol
water sol al.
of Dichloroazobenzene
from heating with
Potash 2nd Sup
150

Chlorobenzoic acid
soft silky [illegible]
Crystals MP 156°C subliming
without decomp
Ba Salt long lustrous needles
Dis in aq Ca salt in
slender hydrated needles
Watts 2nd 163-

---

Benzylene-Diacetimide
forms capillary silky very
bulky crystals which when
dried in the air white in
a felted mass
Not attacked by alkalis
Even boiling. permanent at 200°c
Watts 2nd 184

Biuret - queer cheap its from
urea now made synthetic fine
long needles
2nd Watt 192-3
See further along Diphenyl—
Biuret densely interwoven
needles

See Dichlorohydrin action
of Ammonia Diox & etc
2nd Sup - 318.
cheap I guess

See Diazobenzene Ba
salt long thin needles
Watts 2nd sup 426 -

---

Triphenyl guanidine
2nd Sup 583 long
thin needles

Napthoic acid
long slender needles
2nd 937
+ other things following
Napthoic - & Naphthols
p 840-41
~~Nitro Di Na~~
Dinitro-beta Naphtal
especially fine needles

Oxaluric acid long thin
silky needles 2nd Watts
p 883

Pentachlorophenol
Long flex needles
2nd Watts 906
also see
Tetrachlorophenylene
mp 320 needles

Find several low Melting
point waxes or amorphous
material to melt &
dissolve the needle
producing substance
Then dissolve low MP
wax away & get fine
crystals

See Chloronitrophenols
912 page several
give needles 2nd Sup
several pages of these
Compounds of Phenol
mostly needles

I remember Sulphanilic
acid is needles &
Carbonized without
decomp-

possibly some of the salts
that give needles could
be melted with many
things like Rosin
Cumarone that could
be dissolved & leave the
Crystals free. Expmt to
find best way to get
flex & very fine slender
needles.

Phenyl-Methyl Ketone or
"Acetophenone"
See treatment Very
stable long needles
2nd Sup 940

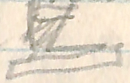
Dinitrophenyl oxide
Long silky needles
MP 135 C 2nd 941

mono
Nitroresorcin 2nd 1043
Long threadlike crystals –
Capillary & felted
Magnesium salt same
Kind of Crystals

Nitrosalicylic acid
Most of its salts Crystallize
in long needles 2nd
1066

Adding Alum to
puff up Clay etc to get
porosity on baking

Sheets of plaster paris
Crystallize in fibres see if
by slow displacement
these fibres can't be
changed to Barium
Sulfate or oxalate lime

See how thin plates can
be made of plaster
paris get best grade
plas by the 

Try Cryst Tetrachlornap
in $CS_2$

See how thin plates
of Clay can be made
could get flexible if thin
enough & use several one
on the other, making
each plate very porous
floated Clay with
Charcoal extremely
fine

See if Cotton fibre can be
Replaced Chemically by
stable chemicals

Plates of magnesium immersed
in Ni or Co salts will be turned
into hydroxide – ~~[illegible]~~ Co Chl
used by Ni – Mg Values
Zinc will do it too if
Dipped for a moment
in $CuSO_4$ – CuZn Couple

Think of mixing the clay
with gelatin, Silica hydrate
or other binder, Sheets
could be rolled out .002
of clay dried + gelatin etc
mixed to a stiff dough
in rolls + a grease put
on rolls can certainly
find a dope to coat
Rolls.

Think Sulfite pulp is better
than Cotton flock for an
entire replacement of the
Cellulose by Stable Chem
for paper
for instance it could be
put in 15% NaOH +
soaked 24 hours then
pressed to get excess NaOH
out, then soaked in MgCl
washed free of Salt
again soaked in NaOH
+ process carried on
again finally the
Mg Hydrox could be
dried at high temp
only trace of Cellulose
left + this might be
burnt out after absorbing
phosphoric or Boric
acid + reignited
Sulfite pulp is specially
good as its porous from
Removal of 40% of lignin

in making needle crystals
I am wondering if from
a saturated Sol after first
Rush of crystals is over
Mother liquor poured off
& fresh Conc sol added
that the crystals will
grow longer

Try if Kapak as well
as Cotton can be replaced
by mongaves used in KOK
as substitute for Asbestos
Kopak is used in life
preservers – I think fibers
are hollow & must be
beat in paper beater –

We can precipitate the
base of all aniline dyes
also Naphthalene & Sulphur
dyes & then Combine these
acid with Organic salts
Like Mg Ba Sr K Na
etc –

# IRON

Make FeS igniting Fe
in Sulfur –
powder up – put in 21%
or stronger NaOH,
& when very hot add
Na hypochlorite to
oxidize the Sulfur of the
iron to get the light
Colored ox I got
on oxdz FeS in cell
itself –

perhaps best way
is to sublime FeCl into
sulfur vapor -

perhaps can make
the hydrated sulfide in
Excess NaOH & dehydrate
it by long boiling
see if monosulfide
fuse conducts current
Try that used in making
HS gas -

Try Expmt using Solid
NaOH & $FeSO_4$ melted together
or mixed in Rolls & then
heated 600° Fahr or
so - & wash out but
heat should be as low as
possible to make anhydrous

perhaps Ferrous Iron can
be made (hydrate) by
precipitating Mg sulfate &
Ferrous sulfate with
minimum air & boil to
Anhydrous,

Anhydrous Ferrous oxide
is probably stable in
Strong alkali & fused
in Cells is reduced easily
by the Current to Metal
How can be form it
say from FeS etc &
get it in the Cell

by dehydrate the Magnetic
Ferrous Ferric can
get part in the Ferrous
probably will be reduced
to Metal in Cell
but doubtful about
the Ferric part
Mendeleff says.

Ferrous Ferric oxides
can be got with greater
amount of Ferrous in
2 or 3 times as
much if these can be
got stable when
dry it might
do the trick as we
could handle it
Consult authorities
Cited by Mendelyeef
on this subject, [Iron]

Ferrous Carbonate on ox
deposits Ferric

Spathic Iron ore is
Ferrous Carbonate
This in powder might
be put in pockets +
put in NaOH + reduced
Electrolytically
or made by dropping
Ferrous Carb in

Hot NaOH, to precip ~~by NaOH~~
+ dehydrate - perhaps it
would then be Spathic &
not catch fire dry -
However it might be
allowed to form Magnetic
ox + thus stabilizes
part of it,
Look up Spathic iron
ore get samples
it is $FeCO_3$ - + not free
$FeO$.

Perhaps instead of
Stabilizing $FeO$ by
$Fe_2O_3$, analogous
oxides like $Fe_2O_3$ could
be combined like
Chromic Cerium etc

perhaps Mg hydroxide

The most fusible slag
is 1 $Al_2O_3$ 4 CaO -
7 $SiO_2$ -
Might dip the Ni
screen made by plating
in this + enamel it.
NaOH added makes it
fuse still lower temp

~~Vol 2 Mendelejeff Says~~
~~there is an iron substance~~
~~pyrophoric it is first formed~~
~~by H at low temp. on of $Fe_2O_3$~~
~~sic ! its FeO~~

Think we can reduce
to Magnetic Ox by
stopping short in our
pots + letting in
NaOH water

to stop it being pyrophoric
This probably can be
used direct after drying
What would be better
is to make it from
Hydroxides + reduce by
H to magnetic -
as described by
Mendelejeff

Look up in Trans +
Abstracts of Chem Socy
all about Iron
see last page this
book

The inner part
of iron scale which
is black is $6 FeO - 1 Fe_2O_3$

How can this be made so its
not pyrophoric -
possibly Fe by H came
at certain stages of
cooling down the
pot, having definite
amount of Oxygen
let in or air &
then shut off &
cooled down

Notes –

see if Mg hydrox or light
Calcined Magnesia will
Combine with Condensite Resin

see maximum. may be harder
& also take place of Resinate
of lead –

see if can make Condensite
of dif metals – & find if any
sol alcohol – & if Condensite
ok –

Possibly a dry cell could
be made with dry powdered
$CuSO_4$ of water & a little
free $H_2SO_4$ & Zinc with
asbestos separator damp
or with a Colloid –
Effect Cu reduced water
slowly set free & with
$H_2SO_4$ Zinc dissolved &
crystallized to $ZnSO_4$
& so on

---

H at 300°C Reduces $Fe_2O_3$
to $FeO$ pyrophoric but
if left 12 hours in H it
dont catch fire, –
(Siewert) Iron in
Roscoe & Schorlemmer
book

ditto of Ferrous Oxalate
is heated out of air
to 150°C or 160°C
Result is $FeO$ + Metal
ditto
Ferrous Oxalate if
added to boiling
Caustic K, the $FeO$
is obtained as a black
Velvety powder
which if washed in
water ~~as~~ takes up
O. ~~Note the~~

Ferrous hydroxide is highly alkaline & so can probably be combined with other things to become stable like in Magnetic ox which will not swell in NaOH

What substance

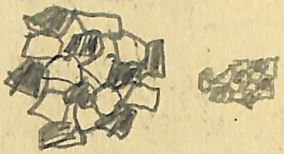
perhaps Cerium $Ce_2O_3$ & other rare sesquihydroxides look up

I think NiO only may be a Conductor )

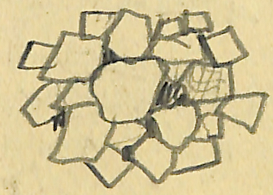
Mud borrowed Maples 40'

Reine Esther Brand
of Sardines -

Palm Beach



57 -
16
73 (570 (78
511
59



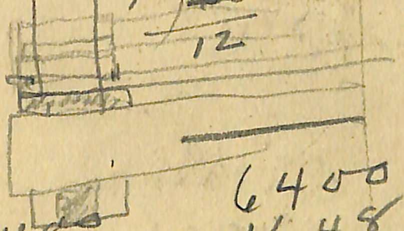
57
2
114
48
162 (1140 (70
1134

160
40
640 profit
7
4.48 - interest at 7%

20% Repossessions - 12.00
448
100 164 8 -

160 - -

47 52



5 ) 60
12

900 64

16.48
2
4752

6400
1648
475

960

75